



Control Number: 51415



Item Number: 392

Addendum StartPage: 0

SOAH DOCKET NO. 473-21-0538

PUC DOCKET NO. 51415

FILED
2021 APR 23 PM 2:41
P. J. ...

PUBLIC UTILITY COMMISSION OF TEXAS

APPLICATION OF
SOUTHWESTERN ELECTRIC POWER COMPANY
FOR AUTHORITY TO CHANGE RATES

REBUTTAL TESTIMONY OF
MARK A. BECKER
FOR
SOUTHWESTERN ELECTRIC POWER COMPANY

APRIL 23, 2021

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1 I. INTRODUCTION

2 Q. PLEASE STATE YOUR NAME, POSITION, AND BUSINESS ADDRESS.

3 A. My name is Mark A. Becker and my business address is 212 East Sixth Street, Tulsa,
4 Oklahoma 74119. I am employed by American Electric Power Service Corporation
5 (AEPSC) as a Managing Director of Resource Planning.

6 Q. PLEASE DESCRIBE YOUR EDUCATIONAL AND PROFESSIONAL
7 BACKGROUND.

8 A. I received a Bachelor of Science degree in Electrical Engineering from the University
9 of Arkansas in 1983. I have more than 35 years of experience working for investor-
10 owned and municipal electric utilities and energy trading companies. The majority of
11 my experience, approximately 30 years, has been related to performing a utility's
12 resource planning and operational analysis functions using the proprietary long-term
13 resource optimization software models know as Strategist® and PLEXOS®.

14 Q. HAVE YOU PREVIOUSLY FILED TESTIMONY IN A REGULATORY
15 PROCEEDING?

16 A. Yes, I have filed written testimony or testified in regulatory proceedings on behalf of
17 AEP regulated operating companies in Louisiana, Arkansas, Texas, Kentucky, and
18 Oklahoma.

19 Q. DID YOU FILE DIRECT TESTIMONY IN THIS CASE?

20 A. No.

1 II. PURPOSE OF REBUTTAL TESTIMONY

2 Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

3 A. The purpose of my rebuttal testimony is to respond to allegations made in the testimony
4 of Sierra Club witness Devi Glick. Specifically, I will address those allegations made
5 in Sections 4 and 5 of Ms. Glick's testimony. In Section 4 of her testimony, Ms. Glick
6 alleges that SWEPCO's Flint Creek and Welsh generating plants have been and are
7 projected to be "uneconomic." The analyses presented in this section of Ms. Glick's
8 testimony do not accurately evaluate the historical operation of these units or the
9 projected value of these units to customers in the future. Notably, much of the capital
10 expenditures that Ms. Glick uses to manufacture net historical losses at these two plants
11 are associated with environmental retrofits found to be prudent by the Commission in
12 SWEPCO's previous rate case.

13 In Section 5 of her testimony, Ms. Glick alleges that SWEPCO plans to
14 "imprudently" invest \$26.8 million to retrofit the Flint Creek plant to operate in
15 compliance with Coal Combustion Residuals (CCR) and Effluent Limitations
16 Guidelines (ELG) requirements established by the U.S. Environmental Protection
17 Agency. As an initial matter, I note that none of the CCR/ELG compliance capital
18 projects that make up the \$26.8 million of investment identified in Ms. Glick's
19 testimony were placed in service before the end of the Test Year¹ and, therefore, are
20 not a part of SWEPCO's rate base requested in this case. As conceded by Ms. Glick,
21 SWEPCO is in the preliminary engineering and design phase and that the project "is

¹ The Test Year is the twelve-month period ending March 31, 2020.

1 only just underway.”² Further, SWEPCO conducted a robust analysis of the cost to
2 serve customers under both the retirement and retrofit scenarios, using the same type
3 of analysis that the Commission has found reasonable and robust in prior cases. In
4 addition, Ms. Glick presents no Flint Creek power plant retirement versus retrofit
5 analysis of her own, and her criticisms of SWEPCO’s analysis are unpersuasive.

6 III. ECONOMIC EVALUATION OF THE OPERATION AND PROJECTED VALUE
7 TO CUSTOMERS OF THE FLINT CREEK AND WELSH PLANTS (GLICK
8 TESTIMONY SECTION 4)

9 Q. ON PAGES 13 THROUGH 19 OF HER TESTIMONY (SECTION 4i), MS. GLICK
10 ALLEGES THAT THE FLINT CREEK AND WELSH PLANTS INCURRED “NET
11 LOSSES” OVER THE PAST SIX YEARS. IS HER ALLEGATION CREDIBLE?

12 A. No. In general, the appropriate way to evaluate the historical operation of a generating
13 unit operating in the Southwest Power Pool Integrated Marketplace (SPP IM) is to
14 compare its market revenues to the incremental variable costs (e.g., variable fuel costs,
15 variable operations and maintenance (O&M) expense, etc.) incurred to produce those
16 revenues. SWEPCO witness Jason M. Stegall provides that comparison in his rebuttal
17 testimony, demonstrating that SWEPCO has operated the Flint Creek and Welsh plants
18 to the benefit of customers during the past six years. Ms. Glick’s analysis is able to
19 manufacture historical net losses only by including in her calculations the capital
20 investment made by SWEPCO to enable operation of the plant for years into the future
21 and expensing that capital investment in the year made. This is inaccurate and is

² Direct Testimony of Devi Glick at 30.

1 inconsistent with how SWEPCO recovers the cost of capital investments from
2 customers over the expected life of the capital investment. In addition, Ms. Glick
3 includes the annual fixed O&M costs incurred at the units, which is inappropriate when
4 considering only incremental variable costs in the calculation. Ms. Glick is mixing two
5 concepts – the evaluation of historical operation of a generating plant and the
6 prospective evaluation of a capital investment – to arrive at an inaccurate conclusion.

7 Q. CAN YOU PROVIDE AN EXAMPLE OF A REASONABLE EVALUATION OF
8 THE HISTORICAL OPERATION OF A GENERATING UNIT IN THE SPP IM?

9 A. Yes. The rebuttal testimony of SWEPCO witness Mr. Stegall provides that evaluation
10 of the Flint Creek and Welsh plants.

11 Q. CAN YOU PROVIDE AN EXAMPLE OF A ROBUST PROSPECTIVE CAPITAL
12 INVESTMENT ANALYSIS?

13 A. Yes. In SWEPCO's previous Texas base rate case, Docket No. 46449, I presented
14 several analyses – called unit disposition analyses – that studied the economics of
15 retiring or retrofitting the Flint Creek and Welsh plants (and other units) to comply with
16 then-emerging environmental regulations, thereby enabling the continued operation of
17 those plants. These unit disposition analyses compared retirement versus retrofit and
18 continued operation on a Cumulative Present Worth of annual Revenue Requirements
19 (CPWRR) basis. The CPWRR for each option is the cumulative present worth of
20 SWEPCO's system energy production costs and recovery of capital expenditures over
21 the study period – in that case 2011 through 2040 netted against the revenues that those
22 resources would receive from making energy sales into the SPP IM. In other words,

1 the analyses were designed to determine the least cost option for meeting customer
2 needs for the 30-year study period.

3 I conducted these analyses with industry-recognized system modeling software,
4 including PLEXOS[®] and Strategist[®]. Forgoing the environmental retrofits in the
5 analyses required retiring and replacing of those plants with new natural gas combined-
6 cycle (CC) generation, market capacity and energy, or in instances where feasible,
7 converting those solid fuel-burning units to natural gas burning units. In Docket No.
8 46449, the Commission determined these analyses were robust and reasonable and
9 found that retrofitting the units was the better path forward for SWEPCO and its
10 customers:

11 The economic evaluations that informed SWEPCO's decision to retrofit
12 Flint Creek, Pirkey, and Welsh units 1 and 3 were robust. These analyses
13 were tested under several sets of input assumptions. The analyses
14 indicated that retrofitting the units was the better path forward for
15 SWEPCO and its customers.³

16 Q. IS THE COMMISSION'S FINDING IN DOCKET NO. 46449 OF PARTICULAR
17 IMPORTANCE WHEN REVIEWING MS. GLICK'S ALLEGATIONS OF
18 HISTORICAL LOSSES AT THE FLINT CREEK AND WELSH PLANTS?

19 A. Yes. Ms. Glick supports her allegations with Table 2 in her testimony. As noted above,
20 the calculations in Table 2 improperly incorporate capital expenditures and fixed O&M
21 costs. And, as noted above, Table 2 assumes these capital expenditures as expensed
22 and recovered from customers in the year made. However, it is also important to note
23 that much of the capital investment that Ms. Glick pulls into her Table 2 calculations

³ *Application of Southwestern Electric Power Company for Authority to Change Rates*, Docket No. 46449, Order on Rehearing at Finding of Fact No. 48 (Mar. 19, 2018).

1 was reviewed by the Commission, found to be prudent, and placed into SWEPCO's
2 rate base in Docket No. 46449.

3 Q. WHAT IS THE SOURCE OF THE CAPITAL EXPENDITURES THAT ARE
4 INCORPORATED INTO MS. GLICK'S TABLE 2?

5 A. The first source cited below Table 2 is SWEPCO's Schedule H-5.3b. This schedule
6 shows historical and projected capital expenditures by year for each plant. That
7 schedule shows that SWEPCO expended more than \$140 million in capital in the six
8 years of Ms. Glick's analysis – 2015 through 2020. However, more than half (i.e., \$81
9 million) of the \$140 million in capital expenditures made at the Flint Creek plant for
10 the time-period 2015 through 2020 were expended in 2015 alone and the vast majority
11 (i.e., \$120 million) of those \$140 million in capital expenditures made over the 2015
12 through 2020 time period were made in 2015 and 2016, combined. The same is true
13 for the Welsh plant. Schedule H-5.3b shows that SWEPCO expended more than \$295
14 million in capital in the six years of Ms. Glick's analysis. However, more than \$188
15 million was expended in 2015 alone and more than \$253 million in 2015 and 2016,
16 combined.

17 Q. WHY IS THIS FACT SIGNIFICANT?

18 A. Based on the strength of SWEPCO's unit disposition analyses that I sponsored in
19 Docket No. 46449 that I discuss above, the Commission found that the more than
20 \$212.9 million of environmental compliance capital investment placed in service at the
21 Flint Creek plant and more than \$338 million at the Welsh plant through June 30, 2016,
22 was prudent. Clearly, Ms. Glick's Table 2 incorporates hundreds of millions of dollars
23 of capital investment already found to be prudent by the Commission in her failed

1 attempt to show “net losses” at the Flint Creek and Welsh plants. Only by expensing
2 in one year the hundreds of millions of dollars of environmental compliance capital
3 investment made in 2015 and 2016 can Ms. Glick’s calculation arrive at the losses she
4 alleges for the six years 2015 through 2020.

5 Q. ON PAGES 19-28 OF HER TESTIMONY (SECTION 4ii) MS. GLICK ALLEGES
6 THAT THE FLINT CREEK AND WELSH PLANTS ARE PROJECTED TO INCUR
7 SIGNIFICANT LOSSES OVER THE NEXT DECADE. DOES MS. GLICK’S
8 ANALYSIS REPRESENT A COMPREHENSIVE UNIT DISPOSITION ANALYSIS
9 OF THE FLINT CREEK AND WELSH PLANTS?

10 A. No. Ms. Glick’s forward-looking analysis is simply an extension of her historical
11 analysis and it includes the same flaws, including the expensing of capital investment
12 in the year made, along with all fuel and O&M costs, and comparing all of these
13 expenditures to projected revenues. More importantly, her analysis also completely
14 omits any consideration of the costs that SWEPCO will incur to serve customers
15 without these plants. In other words, Ms. Glick’s allegation is flawed because it
16 considers only one side of the analysis – where the plant continues to operate – and
17 fails to consider the cost to customers of a scenario where the plant is retired and
18 replacement energy and capacity costs are incurred. Her analysis does not constitute a
19 unit disposition analysis that studies the costs to serve customers with a unit’s
20 retirement versus the costs to serve customers with a unit’s retrofit and continued
21 operation.

1 Q. REGARDING THE POTENTIAL RETIREMENT OF THE FLINT CREEK PLANT,
2 IS THERE A SIGNIFICANT COST OF RETIREMENT THAT MUST BE
3 CONSIDERED?

4 A. Yes. Due to transmission system constraints in northwest Arkansas, if the Flint Creek
5 plant were to be retired, extensive transmission construction would be required to
6 maintain system reliability. Ms. Glick acknowledges this on page 38, lines 7-8 of her
7 testimony. The generation retirement study cited by Ms. Glick in her footnote 76
8 (SWEPCO response to Sierra Club request 3-1) states in relevant part: "Another 345
9 kV line from a remote source into the NW Arkansas area, such as Fort Smith-Chamber
10 Springs or a similar line, would be needed." The cost of such an extensive transmission
11 upgrade would be substantial, estimated to cost \$150 million.

12 Q. ARE THERE OTHER FLAWS IN MS. GLICK'S ANALYSIS OF THE FLINT
13 CREEK PLANT?

14 A. Yes. Ms. Glick's analysis extends only through 2030. However, by retrofitting the
15 Flint Creek plant to be compliant with CCR and ELG, SWEPCO will have enabled the
16 plant to operate through its currently anticipated retirement date in 2038. Therefore, in
17 addition to the flaw noted above, Ms. Glick's analysis ignores nearly half of Flint
18 Creek's expected useful life if retrofitted to comply with CCR and ELG.

1 IV. SWEPCO'S ANALYSIS SUPPORTING CCR/ELG RETROFIT OF THE FLINT
2 CREEK PLANT (GLICK TESTIMONY SECTION 5)

3 Q. HAVE YOU PERFORMED RECENT UNIT DISPOSITION ANALYSES FOR THE
4 FLINT CREEK AND WELSH PLANTS?

5 A. Yes. I conducted comprehensive unit disposition analyses regarding the question of
6 whether to retrofit SWEPCO's Pirkey, Welsh, and Flint Creek plants to meet the
7 CCR/ELG requirements for continued solid-fuel operation or to retire the units.
8 Informed by these analyses, SWEPCO has decided to retire the Pirkey and Welsh plants
9 and retrofit the Flint Creek plant for continued operation.

10 Q. WHEN WERE THESE ANALYSES CONDUCTED?

11 A. These analyses were conducted in October 2020. In discovery in this proceeding,
12 Sierra Club Request for Information 3-2b requested the date the Flint Creek study was
13 conducted. SWEPCO's response was a reference to SWEPCO's response to Sierra
14 Club Request for Information 3-3a, which identifies October 2020 as the date the study
15 was conducted. SWEPCO's CCR/ELG compliance decisions were then made and
16 communicated to the U.S. Environmental Protection Agency in November 2020.

17 Q. PLEASE DESCRIBE THE RESULTS OF THE FLINT CREEK UNIT DISPOSITION
18 ANALYSIS.

19 A. The analysis evaluated the economics of making the required CCR/ELG retrofits that
20 allows the unit to operate through 2038 versus not making those investments and
21 retiring the unit by the end of 2027. The analysis showed that making the CCR/ELG
22 investments and operating the unit through 2038 was in the range of \$86 to \$100 million
23 less expensive than not making the investments and retiring the unit by the end of 2027.

1 I have attached the Flint Creek unit disposition analysis to this testimony as Exhibit
2 MAB-1R.

3 Q. ON PAGE 33 OF HER TESTIMONY, MS. GLICK ALLEGES THAT SWEPCO
4 “DID NOT PERFORM OPTIMIZATION CAPACITY EXPANSION AND
5 PRODUCTION COST ANALYSIS.” IS THIS STATEMENT ACCURATE?

6 A. While it is unclear exactly what Ms. Glick is alleging, it is clear that her testimony does
7 not accurately portray the analysis that was done. The Flint Creek unit disposition
8 analysis employed the industry-standard PLEXOS[®] modeling software to model the
9 entirety of SWEPCO’s generation fleet, as well as its interaction with the larger SPP
10 market. These analyses modeled the total cost incurred to serve customers both without
11 Flint Creek and with the plant and the cost of necessary retrofits.

12 Q. PLEASE DESCRIBE FURTHER THE ANALYSIS THAT WAS PERFORMED.

13 A. The PLEXOS[®] model uses linear programming to produce optimal resource plans for
14 a given set of inputs, such as market energy prices and operating and capital costs of
15 each available resource. The optimal plan is defined as the group of resources that
16 produces the lowest Net Present Value (NPV) of customer costs net of revenues over
17 the forecast window. The PLEXOS[®] model was used to produce simulations of the
18 hourly economic dispatch of the Company’s existing generating resources through their
19 assumed retirement dates, and a suite of available new resource options through 2050
20 in the SPP energy market, to determine each of the scenarios’ annual variable energy
21 production revenues and costs. I note that a total of 73 different generation options
22 were available to the model, including two different sizes of combined cycle natural
23 gas plants, aeroderivative combustion turbines, frame combustion turbines, purchase

1 power agreements, Conservation Voltage Reduction (CVR), wind, solar, and energy
2 efficiency. This planning tool is intended to produce a view of what plausible least-
3 cost resource plans could look like under a given set of assumptions.

4 Q. WHAT ARE THE VARIABLE AND FIXED CHARGES CONSIDERED IN
5 CONNECTION WITH THE MODELING?

6 A. Variable energy production costs include variable fuel costs, variable O&M costs,
7 emission costs, if any, and emission retrofit reagent costs. In addition to variable energy
8 production revenues and costs, the fixed costs for each existing and new resource
9 option were calculated. Fixed costs for all resources included annual fixed O&M costs
10 and recovery of levelized carrying charges on future on-going capital expenditures,
11 including the CCR and ELG capital expenditures.

12 Levelized fixed charge rates, which include a return on capital investment,
13 income and property taxes, and depreciation, were applied to the CCR and ELG capital
14 and all future capital expenses by PLEXOS® for computational efficiency. These
15 levelized rates produce the same NPV of carrying costs over the lifetime of an
16 investment as would carrying charges based on a forecast of rate base declining with
17 depreciation over time.

18 Q. ON PAGE 34 OF HER TESTIMONY, MS. GLICK ALLEGES THAT THE
19 ANALYSIS DOES NOT CONSIDER HOW UNIT UTILIZATION AND
20 REVENUES CAN CHANGE AS THE FLEET MAKEUP CHANGES. DO YOU
21 AGREE?

22 A. No. The annual net cost for each of the scenarios was created by netting the annual
23 variable and fixed costs for Flint Creek, the Company's other generating resources, and

1 the new resource additions against the annual revenues that those resources would
2 receive from making energy sales into the SPP IM. The NPV of the annual net costs
3 was calculated for each CCR and ELG compliance scenario and used as a basis to
4 compare the economics of those scenarios.

5 Q. WHAT RESOURCES WERE AVAILABLE FOR THE MODEL TO SELECT TO
6 REPLACE FLINT CREEK UPON ITS RETIREMENT?

7 A. For this analysis, the Company elected to adopt the 2020 U.S. Energy Information
8 Administration's (EIA) AEO major utility scale options as the primary options
9 available in PLEXOS® to select from in forming optimal resource plans. Supply-side
10 resource options including natural gas base/intermediate and peaking generating
11 technologies and intermittent renewable resources including large-scale solar, wind and
12 battery storage were considered in this plan. Ms. Glick argues that the cost of solar PV
13 and battery storage should be lower than employed by SWEPCO in its modeling.
14 However, SWEPCO did not change or adjust the cost forecasts provided by the EIA.
15 The renewables (Wind and Solar) and battery alternatives were based on the 2020 EIA
16 AEO cost and performance characteristics.

17 Q. ON PAGE 34 OF HER TESTIMONY, MS. GLICK ALLEGES THAT THERE WAS
18 NO MODELING IN THE NEAR TERM OF THE COST TO REPLACE FLINT
19 CREEK WITH ALTERNATIVES SUCH AS SOLAR PV OR BATTERY STORAGE.
20 IS THIS ALLEGATION ACCURATE?

21 A. No. Wind and solar were included in the model to be added starting in 2023, to allow
22 time for these resources to come online and be incorporated into the SWEPCO system,
23 if the model thought it was economic to do so. Battery storage was allowed to be added

1 as early as 2021, but was not added due to poor economics. Solar was not picked by
2 the model until late in the planning period due to economics, not because the
3 availability was constrained in the model.

4 Q. MS. GLICK ALLEGES THAT SWEPCO ASSIGNED A SOLAR PV FIRM
5 CAPACITY CREDIT OF ONLY 16 TO 18 PERCENT. IS THIS ACCURATE?

6 A. No. As noted in Ms. Glick's testimony, SPP's Effective Load Carrying Capability
7 (ELCC) Solar Study Report started with a 62.4% accreditation percentage in 2019.
8 However, that same report found the accreditation percentage decreases over time to
9 15.5% as solar penetration levels and associated reliability concerns increase. In
10 assigning capacity credit to Solar PV, SWEPCO employed SPP's ELCC Solar Study
11 Report, which resulted in a capacity credit that declined through time as more solar was
12 added to the SPP system.

13 Q. ON PAGE 32 OF HER TESTIMONY, MS. GLICK ALLEGES THAT THERE IS AN
14 "UNEXPLAINED JUMP" IN ONGOING CAPITAL COSTS STARTING IN 2028 IN
15 THE FLINT CREEK RETIREMENT SCENARIO. DID SIERRA CLUB REQUEST
16 INFORMATION ABOUT THIS ALLEGED "UNEXPLAINED JUMP," AND
17 WHAT IS THE NATURE OF THESE CAPITAL COSTS?

18 A. No, Sierra Club did not request information about any "unexplained jump" in capital
19 costs. These capital costs are associated with the extensive transmission upgrade I
20 identify above that would be required in the event that the Flint Creek plant were to be
21 retired.

22 Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

23 A. Yes, it does.

Exhibit MAB-1R
Flint Creek Unit Disposition Analysis
EIA Commodity Price Forecasts

EIA Commodity Price Forecast without Carbon Pricing SWEPCo Revenue Requirement CPW (\$000)								
	2021-2030 Planning Period	2021-2050 Planning Period	Post-2050 End-Effects Period	Planning Period + End-Effects Period	Savings of Continued Operation over Retirement			
					2020-2030 Planning Period	2021-2050 Planning Period	Post-2050 End-Effects Period	Planning Period + End-Effects Period
Flint Creek CCR+ELG Retrofits (Continued operation through 2038)	5,414,403	12,030,499	2,911,806	14,942,305	-	-	-	-
No Flint Creek CCR Retrofits (Retirement by end of 2027)	5,421,076	12,098,538	2,944,248	15,042,787	6,673	68,040	32,442	100,482

EIA Commodity Price Forecast with Carbon Pricing SWEPCo Revenue Requirement CPW (\$000)								
	2021-2030 Planning Period	2021-2050 Planning Period	Post-2050 End-Effects Period	Planning Period + End-Effects Period	Savings of Continued Operation over Retirement			
					2020-2030 Planning Period	2021-2050 Planning Period	Post-2050 End-Effects Period	Planning Period + End-Effects Period
Flint Creek CCR+ELG Retrofits (Continued operation through 2038)	5,818,190	13,495,217	3,244,285	16,739,503	-	-	-	-
No Flint Creek CCR Retrofits (Retirement by end of 2027)	5,839,822	13,548,414	3,277,253	16,825,667	21,632	53,197	32,967	86,164